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COST-EFFECTIVENESS OF DIMETHYL FUMARATE TREATMENT FOR RELAPSING-REMITTING MULTIPLE SCLEROSIS FROM A DANISH PERSPECTIVE

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OBJECTIVES: Relapsing-remitting multiple sclerosis (RRMS) is characterized by periods of relapse and remission, leading to progressive accumulation of disability. Disease-modifying treatments (DMTs) are used in treatment of MS to reduce the frequency of relapses and disease progression. The study objective was to compare the cost effectiveness of dimethyl fumarate with teriflunomide for treatment of RRMS in a Danish setting from a healthcare and societal perspective. **METHODS:** In a cohort based Markov model patients progress through a series of disability states based on the Expanded Disability Status Scale (EDSS). At any time, patients have fixed probabilities of progression and relapse dependent on RRMS or secondary progressive MS (SPMS) status and the EDSS score. Mixed treatment comparisons determined the clinical efficacy of the treatment options that in the model act to delay the progression of the disease and reduce the relapse frequency in patients with RRMS. The model uses one-year cycles, and the base case time frame of the analysis was 30 years. Healthcare and societal costs (including productivity losses) and QALYs for each patient are directly linked to the time the patient spends in each EDSS state. **RESULTS:** In the base case, treatment with dimethyl fumarate compared with teriflunomide is associated with a QALY-gain of 0.21 QALYs, at lower healthcare (DKK -87,547) and societal costs (DKK -132,524), implying that dimethyl fumarate is a dominant strategy. Probabilistic sensitivity analyses were performed, showing that dimethyl fumarate dominates from a healthcare and societal perspective in 67.6% and 72.9% of 5,000 simulations, respectively. One-way sensitivity analyses showed that dimethyl fumarate is costsaving from a healthcare and societal perspective at a yearly drug-cost difference up to DKK 46,000 and DKK 58,000, respectively. **CONCLUSIONS:** The analysis demonstrates that dimethyl fumarate is a cost-effective and cost saving treatment alternative from a Danish healthcare and societal perspective.

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A COST-EFFECTIVENESS ANALYSIS OF FINGOLIMOD VERSUS DIMETHYL FUMARATE AS A SECOND-LINE DISEASE MODIFYING TREATMENT IN PATIENTS WITH HIGHLY ACTIVE RELAPSING-REMITTING MULTIPLE SCLEROSIS

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OBJECTIVES: To assess the cost-effectiveness of fingolimod as a second-line therapy for patients with highly active relapsing-remitting multiple sclerosis using a Markov model applied to Greece. **METHODS:** The analysis was undertaken from the perspective of the Greek NHS and the model was populated with data drawn from the literature and national published sources. Two cohorts of patients, one for the intervention and one for the comparator treatment sequence, are simulated in the model over a 50 year time horizon. Each patient in a given cohort is treated with four lines of treatment or removed from treatment due to death. The analysis is based on the subgroup of highly active relapsing-remitting MS patients despite treatment with a previous DMT as this represents fingolimod's main target population. The discount rate was 3.5% per year. Extensive sensitivity analysis was also undertaken. **RESULTS:** This analysis has shown that the use of fingolimod as second-line treatment compared to DMF in these patients results in an incremental cost-effectiveness ratio of €32,939 per QALY gained over a patient's lifetime for Interferon-beta1-aSC – Fingolimod – BSC – BSC compared to Interferon-beta1-aSC – DMF – BSC – BSC, in €33,783 for Interferon-beta1-aIM – Fingolimod – BSC - BSC compared to Interferon-beta1-aIM – DMF – BSC - BSC and in €32,998 for Glatiramer acetate – Fingolimod – BSC – BSC compared to Glatiramer acetate – DMF – BSC – BSC. The above estimates did not vary substantially across a range of assumptions investigated within the sensitivity analyses. **CONCLUSIONS:** The use of fingolimod as second-line treatment compared to DMF in patients with highly active relapsing-remitting MS in a Greek health care setting results in long-term clinical benefit and it is associated with a modest incremental cost-effectiveness ratio that most decision makers would consider acceptable especially for such a disabling disease.

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COST-UTILITY ANALYSIS OF DELAYED-RELEASE DIMETHYL FUMERATE FOR THE TREATMENT OF RELAPSING-REMITTING MULTIPLE SCLEROSIS IN PORTUGAL

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OBJECTIVES: This study aims to assess the cost-utility of delayed-release dimethyl fumarate (DMF; also known as gastro-resistant DMF), a new disease modifying therapy (DMTs), in treatment of patients with Relapsing-Remitting MS (RRMS) in Portugal. **METHODS:** A 1-year cycle Markov model based on the ScHARR MS Model was used to simulate disease progression, measured by Kurtzke Expanded Disability Status Scale (EDSS), relapses, and conversion to secondary-progressive MS (SPMS). It was assumed that patients could discontinue first line treatment (DMF or glatiramer acetate) and switch to a second line, but would stop any treatment after conversion to SPMS or progression to EDSS7. Clinical inputs for active treatments (disability progression, relapse rate and discontinuation of ITT population) were estimated on a mixed treatment comparison while natural history was based on DMF clinical trials and London Ontario database. Utility weights for patients and caregivers were derived from DMF clinical trials and the UK-MS Survey. Resource consumption by EDSS and due to relapses was based on published literature relevant to the Portuguese setting. Unit costs were obtained from official sources. The analysis was conducted from the societal perspective, assuming a time horizon of 50 years and a discount rate of 5%, for both costs and benefits. **RESULTS:** When compared to glatiramer acetate, DMF was associated with delay in progression and reduction in annualized relapse rate, resulting in a gain of 0.39 quality adjusted life years (QALYs), but implying a cost increase of 8.971 € . The incremental cost per QALY is thus 17.433 €. Sensitivity analysis shows that results are more sensitive to disability progression rate. **CONCLUSIONS:** The incremental cost effectiveness ratio of 17.433 € is considerably below the threshold usually accepted for financing medicines in Portugal (around 30.000 €/QALY). Dimethyl Fumarate should be seen as a cost-effective therapy for the Portuguese setting.

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COST-EFFECTIVENESS ANALYSIS OF PEGINTERFERON BETA-1A IN ITALIAN RELAPSING REMITTING MULTIPLE SCLEROSIS MANAGEMENT

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OBJECTIVES: Peginterferon beta-1a is indicated for the treatment of adult relapsing remitting multiple sclerosis (RRMS) patients. The efficacy and safety of subcutaneous (SC) peginterferon beta-1a (PEGIFN beta-1a) was demonstrated in the randomised double blind Phase 3 placebo-controlled ADVANCE trial. We assessed the cost-effectiveness of PEGIFN beta-1a compared with other injectable first-line RRMS treatments in Italy. **METHODS:** The analysis was developed through a Markov model with lifetime simulation in the perspective of the Italian National Healthcare Service (NHS). Outcomes measurements included life years (LYs), quality adjusted life years (QALYs), lifetime costs, and incremental cost-effectiveness ratio (ICER). The natural progression of disease used in the model was based on previously published literature and modelling exercises. Treatment efficacy (reduction of disability progression and reduction of relapse rate) was derived from published mixed treatment comparison. Unit costs were based on Italian 2015 prices and tariffs, and the published literature. A 3.5% discount rate was applied to costs and benefits. One-way and probabilistic sensitivity analyses were developed and cost-effectiveness acceptability curves generated. **RESULTS:** PEGIFN beta-1a provided numerically longer patient survival (19.94 vs. 19.68-19.81 discounted LYs, respectively), and QALY (9.07 vs 8.06 - 8.55 discounted QALY, respectively). The ICER for SC PEGIFN beta-1a vs. IM interferon beta-1a 30mcg; SC interferon beta-1a 22mcg; SC interferon beta-1b 250mcg; or glatiramer acetate 20mcg was €11,018; €12,504; €10,477; €16,599; €21,536 per QALY respectively. Peginterferon beta-1a dominated interferon beta-1a 44mcg. The outcomes of the sensitivity analyses confirmed the robustness of these results. **CONCLUSIONS:** PEGIFN beta-1a was dominant vs SC interferon beta-1a 44mcg and cost-effective when compared with other approved first-line injectable treatments for RRMS in Italy. The ICERs fall well below the commonly accepted thresholds of €30,000 - €50,000 per QALY gained demonstrating that PEGIFN beta-1a is a cost effective treatment.

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EVALUATION OF THE BURDEN OF PARKINSON'S DISEASE IN MEDICARE AND LINKED LONG TERM CARE POPULATION

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OBJECTIVES: To examine the economic burden and health care utilization for patients diagnosed with Parkinson's disease using linked data from Medicare and the Long Term Care (LTC) Minimum Data Set (MDS). **METHODS:** Patients were included in the study if they had at least one diagnosis claim for Parkinson's disease (International Classification of Diseases, 9thRevision, Clinical Modification code 332.xx) during the identification period (01JUL2008-31DEC2010). The first Parkinson's disease diagnosis claim date was designated as the index date. Patients were required to be age ≥65 and have continuous health plan enrollment with medical benefits for 6 months pre- and post-index date. Residents in a LTC facility were defined as study patients using two quarterly assessments recorded in the MDS during the 6-month baseline period. Demographic and clinical characteristics and follow-up health care costs and utilizations were described. **RESULTS:** After 1:1 matching, 1,620 patients were included in each group (disease and control patients), and the baseline characteristics were well-balanced. Patients with Parkinson's disease were more likely to have inpatient stays (14.26% vs. 9.51%, p<0.0001), outpatient visits (47.72% vs. 41.11%, p=0.0002), skilled nursing facility (SNF) visits (20.37% vs. 4.51%, p<0.0001), hospice visits (8.64% vs. 1.36%, p<0.0001), and part D pharmacy visit (62.65% vs. 53.33%, p<0.0001). Compared to control patients, higher all-cause health care costs were also observed for Parkinson's disease patients, including inpatient costs ($2,451 vs. $1,301, p<0.0001), SNF costs ($2,503 vs. $778, p<0.0001), hospice costs ($1,164 vs. $245, p<0.0001), total outpatient costs ($4,477 vs. $1,304, p<0.0001), pharmacy costs ($695 vs. $1,399, p<0.0001) and total costs ($9,775 vs. $5,314, p<0.0001). **CONCLUSIONS:** During a period of 12 months, patients diagnosed with Parkinson's disease had higher health care utilization and costs than matched control patients.

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COST-UTILITY ANALYSIS OF PRAMIPEXOLE EXTENDED RELEASE MONOTHERAPY IN EARLY PARKINSON`S DISEASE

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OBJECTIVES: To evaluate the cost-utility of modern anti-Parkinson drugs in monotherapy early stages of Parkinson's disease (PD) in the Russian Federation. **METHODS:** For analysis of market data regarding PD treatment products we used IMS Health Russia database (2014). The target population was newly diagnosed PD patients over 60 years in the early clinical stages according to Hoehn and Yahr functional scale (HY I-III stage). Comparison drugs: pramipexole ER, piribedil CR, ropinirole ER and rasagiline. Utility effect of anti-Parkinson drugs was evaluated by quantitative scale UPDRS – Unified Parkinson's Disease Rating Scale, part II (daily activities) and III (the severity of motor disorders). In the analysis we took into account the costs associated with adverse drugs reactions (ADR). Discounting